MICRO-TECH SERIES

MT-2400

AC Power Draw and Thermal Dissipation

The information provided on this page is calculated data based on driving both channels to rated output using the 1 kHz Maximum Average Power rating method.

Other parameters used in calculation include a conservative idle current estimate of 90 watts and a conservative estimate of effeciency at 65%.

Information is provided only for getting an idea of current draw and heat produced. Actual performance will vary depending on environment, program material, load, signal, and AC mains voltage and frequency.

Values of calculated current draw are intended to represent average draw corresponding to the thermal breaker requriements that should be met to handle the amplifier as a load on the AC mains.

Peak current draw with dynamic program material may be significantly higher. Thermal information is provided to assist with calculating air conditioning needs. The data here should not be construed as specifications.

Duty cycle of various program material:

Individual speech: 10%
Acoustic/chamber music: 20%
Full-range rock music: 30%
Compressed rock music: 40%
Pink noise: 50%

Here are the equations used to calculate the data presented in Figure 1:

$$\text{AC Mains Power Draw (watts)} = \frac{\text{Total output power with all channels driven (watts)} \times \text{Duty Cycle}}{\text{Amplifier Efficiency (.65)}} + \text{Quiescent Power Draw (watts)}$$

The quiescent power draw is a maximum value and includes power drawn by the fan. The following equation converts power draw in watts to current draw in amperes:

$$\text{Current Draw (amperes)} = \frac{\text{AC Mains Power Draw (watts)}}{\text{AC Mains Voltage} \times \text{Power Factor (.83)}}$$

The value used for Power Factor is 0.83. The Power Factor variable is needed to compensate for the differnece in phase between the AC mains voltage and current. The following equation is used to calculate thermal dissipation:

$$\text{Thermal Dissipation (btu/hr)} = \left(\frac{\text{Total output power with all channels driven (watts)} \times \text{Duty Cycle} \times .35}{\text{Amplifier Efficiency (.65)}} + \text{Quiescent Power Draw (watts)} \right) \times 3.415$$

The value used for inefficiency is 1.00-efficiency. The factor 3.415 converts watts to btu/hr. Thermal dissipation in btu is divided by the constant 3.968 to get kcal. If you plan to measure output power under real-world conditions, the following equation may also be helpful:

$$\text{Thermal Dissipation (btu/hr)} = \left(\frac{\text{Total measured output power from all channels (watts)} \times .35}{\text{Amplifier Efficiency (.65)}} + \text{Quiescent Power Draw (watts)} \right) \times 3.415$$

Micro-Tech 2400

	LOAD														
	2 Ohm Stereo / 4 Ohm Bridge					4 Ohm Stereo / 8 Ohm Bridge					8 Ohm stereo / 16 Ohm Bridge				
Duty Cycle	AC Mains Power Draw (watts)	Current Draw (Amps)		Thermal Dissipation		AC Mains Power Draw (watts)	Current Draw (Amps)		Thermal Dissipation		AC Mains Power Draw (watts)	Current Draw (Amps)		Thermal Dissipation	
		120V	230V	btu/hr	kcal/hr		120V	230V	btu/hr	kcal/hr		120V	230V	btu/hr	kcal/hr
50%	1705	17.2	8.6	2250	567	1321	13.3	6.7	1800	454	890	9.0	4.5	1275	321
40%	1382	13.9	7.0	1850	466	1075	10.8	5.4	1500	378	730	7.4	3.7	1075	271
30%	1059	10.7	5.4	1475	372	828	8.3	4.2	1200	302	570	5.8	2.9	900	227
20%	736	7.4	3.7	1100	277	582	5.9	3.0	900	227	410	4.2	2.1	700	176
10%	413	4.2	2.1	700	176	336	3.4	1.7	600	151	250	2.5	1.3	500	126

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